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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No. : 7,377,261  
Issue Date : May 27, 2008  
Appl. No. : 10/568,184 Confirmation No. 5581  
Applicant : Y. SUKEGAWA et al  
Filed : February 13, 2006  
Title : SPARK IGNITION ENGINE AND METHOD OF  
CONTROLLING COMBUSTION OF THE ENGINE  
Docket No. : H&A-5202  
Customer No.: 24956

Commissioner for Patents  
Office of Patent Publications  
ATTN: Certificate of Correction Branch  
P.O. Box 1450  
Alexandria, VA 22313-1450

July 25, 2008

**Certificate**

JUL 29 2008

of Correction

**REQUEST FOR CORRECTED PATENT OR**  
**CERTIFICATE OF CORRECTION**  
**DUE TO PATENT OFFICE MISTAKE (37 CFR §1.322)**

Sir:

Enclosed are completed Certificate of Correction forms. Please issue a Certificate of Correction for the corrected claims as shown. The changes correct errors in printing the claims from the way in which they were presented to the Patent Office in an amendment filed December 19, 2007. A review of PAIR shows that the claims filed on that date, and which were subsequently allowed, do not correspond to the claims contained in the issued patent. The reason for

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U.S. Patent No. 7,377,261

Our Ref: H&A-5202

Serial No. 10/568,184

Request for Certificate of Correction filed July 16, 2008

the disparity between the allowed claims and the printed claims is unknown to Applicants. Furthermore, due to the substantial changes to the claims, the Patent Office is requested to consider whether a corrected patent be issued in lieu of a Certificate of Correction.

Since the Certificate of Correction is necessitated by an error on the part of the Patent Office, no fee is submitted herewith. However, should the Patent Office decide that this Request for Certificate Correction requires a fee, the Commissioner is hereby authorized to charge deposit account no. 50-1417.

Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.

By 

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PATENT NO. : 7,377,261  
APPLICATION NO.: 10/568,184  
ISSUE DATE : May 27, 2008  
INVENTOR(S): Y. SUKEGAWA et al

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**IN THE CLAIMS**

Column 33, line 28, through column 34, line 49, the claims should read:

29. A combustion control method ~~according to claim 28, further of a spark ignition engine,~~ comprising the steps of:  
generating turbulence in an exhaust flow in an exhaust passage;  
injecting fuel directly into a combustion chamber; and  
injecting fuel in an expansion stroke in the case where a temperature of the engine is lower than a predetermined temperature.  
~~-setting a time interval between a latest fuel injection initiation timing and an ignition initiation timing to 9 ms or more.~~

30. A combustion control method ~~according to claim 26, further of a spark ignition engine,~~ comprising the steps of:  
causing penetration of injected fuel spray in a direction of an ignition plug longer than that in a direction of a piston;  
in the case where a temperature of the engine is lower than a predetermined temperature, injecting fuel in a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a theoretical air-fuel ratio; and  
causing ignition timing to occur immediately before a compression stroke top dead center or later.  
~~injecting fuel into an intake port;~~  
~~and in the case where the temperature of the engine is lower than the predetermined temperature, injecting fuel in an intake stroke.~~

31. A combustion control method of a spark ignition engine, comprising the steps of:  
in the case where a temperature of the engine is lower than a predetermined temperature, generating a forward longitudinal vortex in a combustion chamber;

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injecting fuel in a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a theoretical air-fuel ratio; and  
causing ignition timing to occur immediately before a compression stroke top dead center or later.  
~~generating turbulence in an exhaust flow in an exhaust passage;~~  
~~injecting fuel directly into a combustion chamber; and~~  
~~injecting fuel in an expansion stroke in the case where a temperature of the engine is lower than a predetermined temperature.~~

32. A combustion control method of a spark ignition engine, comprising the steps of:  
causing penetration of injected fuel spray in a direction of an ignition plug longer than that in a direction of a piston;  
in the case where a temperature of the engine is lower than a predetermined temperature, generating a forward longitudinal vortex in a combustion chamber;  
injecting fuel in a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a theoretical air-fuel ratio; and  
causing ignition timing to occur immediately before a compression stroke top dead center or later.

33. A combustion control method of ~~a spark ignition engine~~ according to Claim 31, comprising the steps of:  
regulating the strength of a forward longitudinal vortex generated in a combustion chamber so that a magnitude of a fluctuation of engine speed or torque fluctuation is a predetermined value or less; and  
delaying ignition timing to an extent possible.  
~~in the case where a temperature of the engine is lower than a predetermined temperature, generating a forward longitudinal vortex in a combustion chamber;~~

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~~injecting fuel in a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a theoretical air-fuel ratio; and  
causing ignition timing to occur immediately before a compression stroke top dead center or later.~~

34. A combustion control method ~~according to claim 33~~ of a spark ignition engine, comprising the steps of:

in the case where a temperature of the engine is lower than a predetermined temperature, injecting fuel in a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a theoretical air-fuel ratio;  
regulating an injection pressure of fuel so that a magnitude of a fluctuation of engine speed or torque fluctuation is a predetermined value or less; and  
delaying ignition timing to an extent possible.  
~~regulating the strength of a forward longitudinal vortex generated in a combustion chamber so that a magnitude of a fluctuation of engine speed or torque fluctuation is a predetermined value or less; and  
delaying ignition timing to an extent possible.~~

35. A combustion control method of a spark ignition engine according to Claim 28, further comprising the steps of:

setting a time interval between a latest fuel injection initiation timing and an ignition initiation timing to 9 ms or more.  
~~causing penetration of injected fuel spray in a direction of an ignition plug longer than that in the direction of a piston;~~  
~~in the case where a temperature of the engine is lower than a predetermined temperature, generating a forward longitudinal vortex in a combustion chamber;~~

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**IN THE CLAIMS**

~~injecting fuel in a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a theoretical air-fuel ratio; and~~  
~~causing ignition timing to occur immediately before or later than a compression stroke top dead center.~~

36. A combustion control method of a spark ignition engine, according to Claim 26,  
further comprising the steps of:

injecting fuel into an intake port; and  
in the case where the temperature of the engine is lower than the  
predetermined temperature, injecting fuel in an intake stroke.  
~~a second half of a compression stroke so that an air-fuel ratio is in a vicinity of a~~  
~~theoretical air-fuel ratio;~~  
~~regulating an injection pressure of fuel so that a magnitude of a fluctuation of~~  
~~engine speed or torque fluctuation is a predetermined value or less; and~~  
~~delaying ignition timing to an extent possible.~~

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Patent Practice

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